Raritan River Fink Through-Truss Bridge
(Hamden Bridge)
Spanning the South Branch
of the Raritan River
on County Route #2
Clinton Vicinity
Hunterdon County
New Jersey

HAER No. NJ-18

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
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Fink Through-Truss Bridge
(Hamden Bridge)

NJ-18

Location: Spanning the south branch of the Raritan River, on County Route #2, in Hamden, Clinton Vicinity, Hunterdon County, New Jersey

Date of Erection: 1857-8

Owner: Board of Chosen Freeholders
Hunterdon County

Use: Vehicular Bridge; demolished by automobile collision September, 1978

Significance: At the time of its demolition in 1978, the Hamden bridge was one of only two Fink Through-Truss Bridges known to remain in the U.S. (The other is in Tuscarauras County, Ohio. See The Ohio Historic Bridge Inventory, Evaluation and Preservation Plan, Ohio Department of Transportation, 1983: p. 43). Albert Fink formulated a structural suspension system that was an early and effective method of spanning relatively large distances with cast and wrought iron components. The bridge at Hamden is an excellent example of the Fink Truss design.

The bridge is essentially a rectangular box measuring 100 feet by 15 feet by 19 feet high. Vertical compression members are spaced at 12 foot intervals and are hexagonal shaped cast iron. The end verticals are also cast iron, but are of heavier construction. All diagonal tension members are wrought iron, while the top chord lateral bracing is primarily cast iron. The floor beams and stringers are believed to be wrought iron. Researchers should note that some parts of the bridge have been replaced with steel I-beams and pipes.

The Hamden bridge is nearly identical to an illustration of Albert Fink's first patent (#10,887) dated May 9, 1854. Albert Fink (1827-1897) is regarded as the "father" of 19th century railway economics and statistics in America, but of equal importance, he was an innovative iron bridge builder in the 1850s.

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Fink was a German refugee who came to America in the late 1840s and began work as an engineer for the Baltimore & Ohio Railroad in 1849. The earliest pioneers in iron bridge construction were usually the canal and railroad companies, because of their interest in increasing bridge durability and longevity. The life span of wooden bridges was increased by covering them (this reduced weathering and rot), yet this in turn increased the cost of construction, and increased the chances of their being damaged by fire.

Local highway construction was generally handled by local designers and builders, while early iron bridge construction was generally pursued only by the large railroads and canal companies. Thus, the construction of the Raritan River Bridge in iron was quite unusual for a local municipality.

The Hunterdon County Board of Chosen Freeholders argued throughout the summer of 1857 as to whether to construct the Hamden Bridge of wood or iron. A decision had been reached at the June 9th Board Meeting to construct a three span wooden bridge. Only after a presentation by Aaron H. VanCleve, President of the Trenton Locomotive & Machine Manufacturing Co., did they agree to consider the alternative of constructing an iron bridge. The Board debated through July and August whether the additional expense of an iron bridge could be justified. Finally, on August 29th the Board voted unanimously to build the bridge in iron.

A contract was written with the Trenton Locomotive & Machine Manufacturing Co. by September 15. The structure was finished by February, 1858, and load testing was performed before the Board on February 9, 1858. An estimated load of eleven tons and 50 men was accomodated. Evidently the Board was well pleased, for they contracted for another similar bridge in September of 1858.

The Trenton Locomotive & Machine Manufacturing Co. was founded by Aaron Howell VanCleve and his brother-in-law, William R. McKean. They purchased the Trenton foundry of Sutton & Crooks, known as the Mercer Works, sometime after 1842. The foundry was located on the Delaware River adjacent to Cooper & Hewitt's Trenton Iron Co.

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By the early 1850s the scale of activities had been enlarged to include production of gasworks for Augusta, GA; Jersey City, NJ; Newburyport, MA; and Petersburg, VA. They also produced locomotives for several prominent rail companies. The foundry was incorporated as the Trenton Locomotive & Manufacturing Co. in March, 1854. They advertised a diverse line of products: railroad machinery, mill gearing, gasworks, waterworks, iron bridges, iron buildings, iron screw piles (Lighthouses), stationary engines, and boilers. The company is now a branch of U.S. Steel and most of the 1853 buildings survive.

References:

Hunterdon County Board of Chosen Freeholders; Minutes, 1841-1863; Flemington, NJ

Karschner, Terry; National Register Nomination Form, August 1, 1974

"Plans of Bridges Built By The Trenton Locomotive & Machine Manufacturing Company," Promotional Brochure, ca. 1854, Collection of the Smithsonian Institution

Transmitted By: Kevin Murphy, Historian HAER, June 1984